



Missouri Department of Natural Resources

## Total Maximum Daily Load Information Sheet

### McKenzie Creek (BOD)

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#### Waterbody Segment at a Glance:

**County:** Wayne  
**Nearby Cities:** Piedmont  
**Length of impairment:** 2.5 miles  
**Pollutant:** Biochemical Oxygen Demand (BOD)  
**Source:** Piedmont Wastewater Treatment Facility (WWTF)



State map showing location of watershed

See also McKenzie Creek pH Information Sheet

**TMDL Priority Ranking:** High

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#### Description of the Problem

##### Beneficial uses of McKenzie Creek

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health associated with Fish Consumption

##### Use that is impaired

- Protection of Warm Water Aquatic Life

##### Standards that apply

- Missouri's Water Quality Standards (WQS), 10 CSR20-7.031 (4)(A)3 and Table A, require dissolved oxygen levels (related to BOD) to be no less than 5.0 mg/L unless the natural (uninfluenced by water pollutants) dissolved oxygen level is less. In that case, the natural level becomes the minimum allowable standard

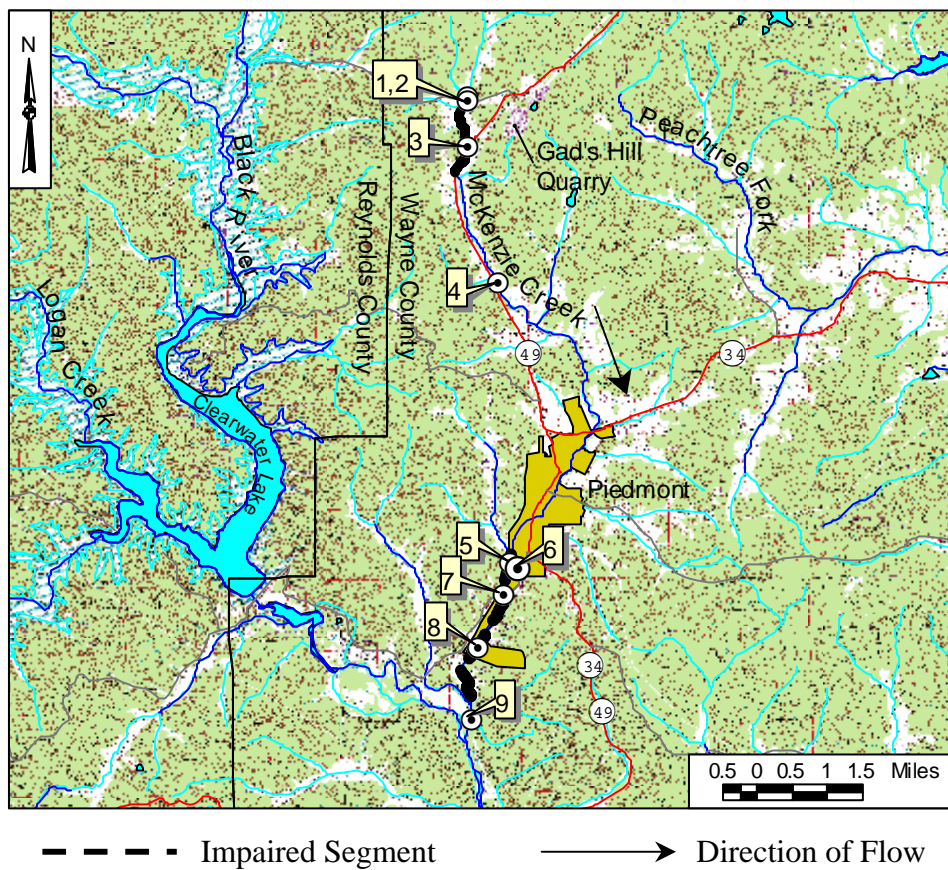
#### Background Information and Water Quality Data

McKenzie Creek is a tributary to the Black River. The department conducted three water quality surveys in 2000 and 2001, which showed that the Piedmont wastewater lagoon causes significant reductions in the dissolved oxygen levels in the lower portion of McKenzie Creek. Discharges from wastewater treatment plants are known to be high in Biochemical Oxygen Demand (BOD) and nitrogen and phosphorus. BOD and plant nutrients such as nitrogen and phosphorus can reduce the amount of dissolved oxygen in the stream's water. Reduced dissolved oxygen in the stream adversely affects aquatic organisms. A summary of water quality data for McKenzie Creek is given in the table below.

Table 1. Mean Early Morning Water Quality of McKenzie Creek in the Vicinity of the Piedmont Wastewater Lagoon, 2000-2001.						
Location	Flow (cfs)	D.O. (mg/L)	NH3N (mg/L)	NO3N (mg/L)	Total Phosphorus (mg/L)	CBOD (mg/L)
McKenzie Cr. 30 yards above Piedmont Lagoon	2.6	4.1	<0.05	0.25	0.02	<2
Piedmont Wastewater Lagoon effluent	0.35	0.7	10.18	0.09	3.02	16.2
McKenzie Cr. 0.4 mile below Lagoon	4.2	<b>1.5</b>	0.43	0.48	0.26	<2
McKenzie Cr. 1.4 mile below Lagoon	5.1	<b>2.3</b>	<0.05	0.28	0.19	<2
McKenzie Cr. 2.4 miles below Lagoon	4.4	<b>3.4</b>	<0.05	0.17	0.08	<2

Source: Missouri Department of Natural Resources

### McKenzie Creek in Wayne County, Missouri, Showing the Impaired Segment and the Sampling Sites



An index to the sites is on the next page.

### **Site Index**

- 5 – McKenzie Creek 30 yards above Piedmont Lagoon
- 6 – Piedmont Lagoon outfall
- 7 – McKenzie Creek 0.4 mile below Piedmont Lagoon
- 8 – McKenzie Creek 1.4 miles below Piedmont Lagoon
- 9 – McKenzie Creek 2.4 miles below Piedmont Lagoon

**For more information call or write:**

Missouri Department of Natural Resources

Water Protection Program

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